

Claims:

1. In a computing system that includes dynamic compilation capability, a method for controlling the execution of an instruction, comprising the steps of:

translating an instruction from a first representation to a translated representation, and
5 setting a tag associated with the instruction in the first representation;

prior to execution of a given instruction in the first representation, examining the tag associated with the given instruction, and if such associated tag has been set, branching to the translated version of the given instruction.

10 2. The method of claim 1, comprising the further step of looking up the address of the translated version of the instruction.

15 3. The method of claim 2, further comprising executing the translated version of the given instruction, and, upon reaching the end of such execution, determining whether a subsequent instruction is to be executed, and if so, determining whether such subsequent instruction exists in a translated version by examining a tag associated with a first representation of the subsequent instruction.

4. The method of claim 3, wherein the translated version is stored in cache memory.

5. The method of claim 4, wherein the translated instruction is an optimized version of the first instruction, but in the same instruction set as the first instruction.

6. The method of claim 4, wherein the translated instruction is represented in a different instruction set than the first instruction.

5 7. The method of claim 1, wherein the tag is represented by a single bit.

8. The method of claim 1, wherein the tag is represented by a field of multiple bits, said field also indicating information about the instruction in the first representation selected from the group consisting of: profile information and exception information.

9. The method of claim 1, wherein a single tag corresponds to a plurality of instructions in
10 the first representation.

10. The method of claim 1, wherein if the associated tag has not been set, executing the given instruction.

11. In a computing system that includes dynamic compilation capability, the improvement comprising:

15 means for translating an instruction from a first representation to a translated representation, and for setting a tag associated with the instruction in the first representation;

means for, prior to execution of a given instruction in the first representation, examining the tag associated with the given instruction, and if such associated tag has been set, branching to the translated version of the given instruction.

12. The system of claim 11, further comprising means for looking up the address of the
5 translated version of the instruction.

13. The system of claim 12, further comprising means for executing the translated version of the given instruction, and, upon reaching the end of such execution, determining whether a subsequent instruction is to be executed, and if so, determining whether such subsequent instruction exists in a translated version by examining a tag associated with a first representation
10 of the subsequent instruction.

14. The system of claim 13, wherein the translated version is stored in cache memory.

15. The system of claim 14, wherein the translated instruction is an optimized version of the first instruction, but in the same instruction set as the first instruction.

16. The method of claim 14, wherein the translated instruction is represented in a different
15 instruction set than the first instruction.

17. The system of claim 11, wherein the tag is represented by a single bit.

18. The system of claim 11, wherein the tag is represented by a field of multiple bits, said field also indicating information about the instruction in the first representation selected from the group consisting of: profile information and exception information.
19. The system of claim 11, wherein a single tag corresponds to a plurality of instructions in
5 the first representation.
20. The system of claim 11, further comprising means for, if the associated tag has not been set, executing the given instruction.